Developing long-term urbanization scenarios for the Appalachian and Gulf Coastal Plain and Ozarks LCCs as part of the Southeast Regional Assessment Project

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Overview: Traditional urban growth models are very localized and data-intensive and lack the capability to be applied across large regions, in response to these limitations the North Carolina Cooperative Research Unit began using the USGS SLEUTH urban growth model to develop urbanization scenarios as part of the Southeast Regional Assessment Project (SERAP). Extensive modifications of the model framework and calibration were undertaken that resulted in the ability to rapidly develop urbanization scenarios for very large regions, such as the Appalachian and Gulf Coastal Plain Landscape Conservation Cooperatives (LCCs). This new modeling effort allows LCC's to address fundamental questions that affect conservation planning over decadal time scales.

These particular LCCs have experienced both rapid exurban growth (e.g. Atlanta, Houston, Nashville, and Washington D.C.) as well as population decline across Louisiana, Mississippi, West Virginia, eastern Ohio, and central Pennsylvania. Regions of particular interest may include (but are not limited to) simulating population change in the New Orleans-Baton Rouge metropolitan region post-Katrina, urbanization pressures along the Alabama Gulf Coast and Florida panhandle regions, or exurban development pressure on Appalachian habitat corridors in the Washington D.C. metropolitan region. Thus changing urbanization patterns in this region may present special challenges or opportunities for conservation over the coming decades that require additional collaboration in this modeling effort.

Project Goal: Using our modified version of the SLEUTH model, develop baseline and future scenarios of urbanization over the next 50-100 years for the Appalachian and Gulf Coastal Plain and Ozarks Landscape Conservation Cooperatives (LCCs).

Timeline and Deliverables: This project builds upon work already being done as part of the Southeast Climate Science Center funded Southeast Regional Assessment Project by extending urban growth prediction models to cover the full extent of the Gulf Coastal Plain and Ozarks and Appalachian LCCs.

Start Date: July 1, 2011

End Date: January 31, 2013

Year 1

- Obtain census information on road network for states in Appalacian and GCPO LCCs
- Delineate urban domains based on US Census Bureau Combined Statistical Areas
- Calibrate model parameters based on historic urban patterns
- Simulate baseline urban scenario for 50-100 years across LCCs
- Begin evaluation of impact of projection urbanization on habitat corridors

Year 2

- Work with partners to develop one to three alternative urbanization scenarios for various metropolitan regions
- Evaluate impact of projected urbanization on habitat corridors